

PATENT SPECIFICATION

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(54) A SLIDE FASTENER HAVING DISCRETE FASTENER ELEMENTS

- (71) We, YOSHIDA KOGYO KABUSHIKI KAISHA, of No. 1, Kanda Izumi-cho, Chiyoda-ku, Tokyo, Japan; a corporation organised under the laws of Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- 10 This invention relates to slide fasteners and has particular reference to slide fasteners of the type having interengageable fastener elements extruded, injected, or otherwise molded into a discrete formation.
- 15 The proper functioning of slide fasteners of the type described is determined predominantly by the stability with which the fastener elements are secured and held in position relative to the respective stringer tapes. Difficulties have been involved in affixing discrete or discontinuous fastener elements, which are relatively heavy and rigid, securely to the stringer tapes which are relatively weak and flexible, and maintaining their correct relative positions against displacement under varying conditions. This problem is noted in particular where the stringer tapes are of a coarse structure, woven or knitted.
- 30 The fastener elements mounted usually astride of a longitudinal edge of such coarse tape are liable to shifting out of position and often separation from the tape when the latter is subjected to lateral pull.
- 35 With these difficulties in view, the present invention has for its primary object to provide a slide fastener having a series of discrete fastener elements secured to each of stringer tapes of a coarse structure in such a manner that they can be held in their correct relative positions with increased stability against displacement or detachment relative to the tapes.
- 45 The above object and other features of the invention will be better understood

from the following description taken in connection with accompanying drawings in which;

Figure 1 is a plan view of a slide fastener according to the invention;

Figure 2 is a transverse cross-sectional view taken on the line II-II of Figure 1; and

Figure 3 is a perspective view of the slide fastener shown in Figure 1.

According to the invention, there is provided a sliding clasp fastener comprising a pair of opposed stringer tapes of a coarse structure having open interstices therein, a supporting core extending longitudinally of the stringer tape and partly exposed through said interstices, each of said pair of tapes being folded on itself around said core and bonded thereto so as to form an element-carrying edge along said core, a series of discrete fastener elements each having upper and lower legs extending in a common direction transverse to a longitudinal direction of the series of fastener elements and defining a space therebetween, said series of fastener elements being moulded in situ to said element-carrying edge, and the material from which said fastener elements are moulded extending through said interstices and forming a unitary bond with the exposed core and the stringer tape, whereby said fastener elements have their upper and lower legs mounted astride of said element-carrying edge and joined integrally together.

According to the illustrated embodiment of the invention, there is provided a slide fastener generally designated by the reference numeral 10 which comprises a pair of oppositely disposed identical stringer tapes T and a series of discrete fastener elements E secured to a longitudinal edge of each of said tapes and disposed to be taken into and out of engagement by a slider (not shown) to close and open the fastener. For the sake of brevity, there is shown and de-

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scribed only one of the two identical stringer tapes T.

The tape T is a woven structure consisting of warp threads W running longitudinally of the fastener and weft threads Y laid transversely across the warp threads W in the usual manner. These groups of threads are woven together coarsely with fine apertures or open interstices 11 formed in the system of the tape T.

According to an important feature of the invention, there is provided a supporting core or cord C which extends longitudinally of the tape T and parallel with the warp threads W, and the tape T is folded on itself around and bonded unitarily to the cord C so as to form a superimposed dual tape structure as better seen in FIG. 3. The resulting two halves of the tape T may be left separated as seen in FIG. 3, or may be bonded with each other and together with the supporting cord C as by an adhesive or may be fused together if the tape T and the cord C are made of a plastics material.

As a result of folding the tape T around the cord C and bonding it thereto, the tape T is provided with an element-carrying edge 12 which embraces the supporting cord C and which is thus reinforced thereby to retain sufficient physical strength to permit the fastener elements E to be securely anchored against displacement or detachment from the tape T.

More specifically, when the fastener elements E are attached to the element-carrying edge 12 of the tape T as by injection or extrusion, the molten material of the elements E, particularly that of the leg portions *Ea*, *Eb* thereof, passes through the interstices 11 in the tape system at the element-carrying edge 12 and joins the upper and lower legs *Ea* and *Eb* integrally together that are mounted astride of the edge 12, as best shown in FIG. 2.

The outstanding advantage of the invention resides in the utilisation of a coarsely woven or knitted tape which has hitherto been considered to be inadequate for use as a stringer tape due to lack of strength with a single sheet of tape, and more specifically in the concept of folding the tape T on to itself around and bonding it to the supporting cord C which provides added reinforcing effect, and which is partly exposed through the interstices in the tape system and thus

making use of the interstices 11 for communicating therethrough the injected or extruded molten material of the fastener elements E to permit the formation of an integral bond between the leg portions *Ea*, *Eb* of the elements E which consequently embraces both the tape threads and the exposed cord C.

It will be understood that the positional stability of the fastener elements E mounted on the tape T can be further increased by using a thermoplastic material for either or both of the warp and weft threads W, Y so that these threads can be fused integrally with the fastener elements E.

WHAT WE CLAIM IS:—

1. A sliding clasp fastener comprising a pair of opposed stringer tapes of a coarse structure having open interstices therein, a supporting core extending longitudinally of the stringer tape and partly exposed through said interstices, each of said pair of tapes being folded on itself around said core and bonded thereto so as to form an element-carrying edge along said core, a series of discrete fastener elements each having upper and lower legs extending in a common direction transverse to a longitudinal direction of the series of fastener elements and defining a space therebetween, said series of fastener elements being moulded in situ to said element-carrying edge, and the material from which said fastener elements are moulded extending through said interstices and forming a unitary bond with the exposed core and the stringer tape, whereby said fastener elements have their upper and lower legs mounted astride of said element-carrying edge and joined integrally together.

2. A slide fastener as defined in Claim 1, wherein said tape is made of a plastics material.

3. A slide fastener as defined in Claim 1 wherein said supporting core is made of a plastics material.

4. A slide fastener substantially as herein described with reference to and as illustrated in the accompanying drawings.

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FIG. 1

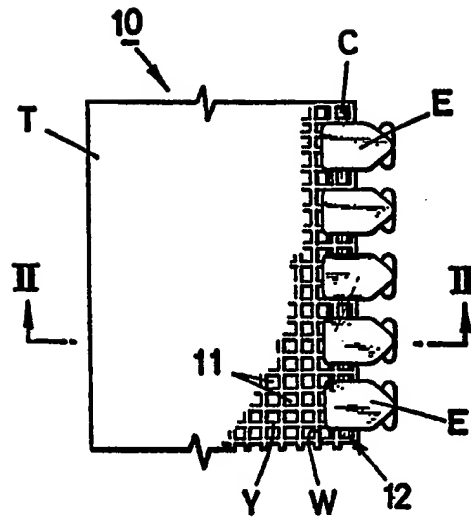


FIG. 2

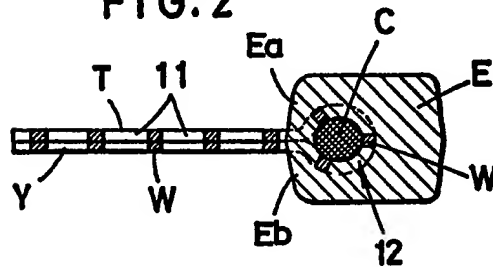


FIG. 3

